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*Spatio-temporal Context
and the Emergence of the Future*

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Sommaire



1. Introduction	4
2. Decision-making and the Emergence of the Future	5
3. Focusing on Time	7
4. Creating a Spatio-temporal Context	8
5. Making Sense Through the Use of Descriptive and Practical Examples	10
6. Raising an Agenda	12
7. References	13



Abstract: This paper states that the most important cognitive framework that influences why we see what we do and not something else is tied up with the way we think about causality. The notion of causality is relevant whether we refer to everyday decisions made by people or landmark decisions made by large corporations. The paper further argues that the main source for increasing effectiveness in decision-making, and therefore in our ability to influence the emergence of the future to our advantage, derives from the explicit recognition that there are different types of systems in which different causal assumptions apply. The paper states that both the nature of strategic landscape and the time frame at stake, the spatio-temporal context, influences the causal assumptions that apply. In the end descriptive examples are used to assist reader's sense-making.

Key words: Multi-ontology, sense-making, decision-making, spatio-temporal context, causality, emergence, future.

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1. Introduction

It has been noted that managers' sense-making and decision-making activities are tied to their cognitive frameworks. These frameworks are relatively abstract representations of things and events that managers have developed over time through experience and interaction with others. They work in a circular fashion; when individuals interact within their environment frameworks and models are built, reinforced and neglected, and in their turn they will be used to make sense of future interactions. In brief, past experiences shape our template for our understanding of future experiences. (Abelson 1976, Fiske and Taylor 1991, Weick 1995, Bogner and Barr 2000).

In their daily work managers are constrained not only by practical issues like financial goals and constituency demands, but also and significantly by their own beliefs and assumptions. (Chen and Lee 2003). This paper argues that the most powerful cognitive framework that influences what is noticed, the interpretation of what is noticed, and what kind of action is taken by individuals is the way we think about cause and effect relationships. (Aaltonen 2007a).

Cognitive frameworks are products of, and simultaneously can produce, an interactive process of instantiation. They are based on shared assumptions, knowledge and practices and are spread through interaction between people. They can change incrementally when they are repeatedly retold, or more rapidly through second-order change because when old frameworks and models lose their explanatory power and are no longer useful, in a sense-maker's world, they are replaced by new ones. (Bowker and Star 1999, Axelrod and Cohen 2000).

In fact, the Western causality thinking has evolved from a true Aristotelian causal thinking, in which four causes (material, efficient, formal and final) and their interdependence were seen as influencing the emergence of the future, into a Newtonian science that stressed the importance of efficient cause as the supreme principle of Aristotle's physics (Aaltonen 2007 c). However, little by little Aristotle's approach was made redundant. This paper again revitalizes the old Aristotelian multi-causality thinking and acknowledges that ever more seldom the future emerges through single or few causes but from the interaction of multiple, underlying and interrelated causes. Explicit consideration of our causal, spatial and temporal dependencies creates a basis for a new theory.

The qualitative shift in Western causality thinking has always had significant practical implications for science and in business. In fact, every time we start to think differently about cause and effect relationships the practical consequences are vast.

2. Decision-making and the Emergence of the Future

When we talk about decision-making, we must ask whose decisions we refer to. Managers are certainly one group, if we use a traditional top-down cognitive framework. However, if we evaluate the question by using other aspects, and especially, those of bottom-up cognitive frameworks, and consider that the emergence of the future, the outcome of decision-making depends on many, then it must be stated that – “everybody's in the organization”. In addition, perhaps many of those outside the organization also affect it. (Fuglseth and Gronhaug 2003, Abele and Bless and Ehrhart 2004).

In consequence, we need to reduce our focus a bit and not discuss all the possible decisions. However we cannot afford to ignore discussing strategic decisions. A strategic decision has three characteristics: 1) the decision is important to the organization; 2) it involves a significant commitment of resources and/or affects the overall direction of the organization; and 3) it is representative of the type of strategic decisions that are typically made in the organization. (Mueller, Mone and Barker 2000). Furthermore, strategic decision-making encourages organizations to think about long-term issues (Schwenk and Shrader 1993), provides a structured approach to the identification and evaluation of strategic options and allows the maximum use of organizational resources (Drohan 1997), which leads to a greater consistency of focus, organizational skills and organizational work effort (Drago 1998, Cohen 2001).

A relevant theory or a model should be sufficiently generic so that it does not express only part of the phenomena it claims to explain, and it should be configured in a way that it expands our thinking, concerns, and planning so that we may see linear cause and effect processes connect with others until we recognise whole web of interconnections. In an opposite case, a model might hamper rather than help to understand the relevant phenomena. (C.f. Poli 2007).



Classic sense-making and decision-making models are set in a mostly linear environment, reflecting the simpler and more stable environments of their time. They usually assume that decisions are made at the highest levels by managers who are actively involved in the running of the organization, and normally focused on one country or region. (Friedman 2000, McKenna and Martin-Smith 2005).

In recent years our perceptions about the strategic landscape have changed. Emerging technologies, unexpected user patterns, and complex interactions between variables has produced unforeseeable, disruptive outcomes. (D'Aveni 1994, Brown and Eisenhardt 1998, Bogner and Barr 2000, Goodhue and Cammock and Hamilton 2004). Along with this change, fundamentally different approaches of seeing and thinking about the future have emerged.

In the past solutions were proposed for problems that were old and at least relatively well-known. Today the novelty consists of the nature of the questions themselves, in the way these questions are asked, but not so much in their solutions.

Rapid changes in environmental factors, the relative ease of entry and exit of corporations from a business area, plus ambiguous consumer demands depict the strategic landscapes of several organizations. Let us not, however, jump from one extreme to another. In addition to those kinds of landscapes, there are more linear and even more disruptive ones. In a multi-ontology sense-making approach, we recognize that there are different kinds of systems that apply different causal assumptions. This recognition helps us to understand why we see what we do and not something else, and also helps to make sense of what tools, techniques and interventions to use within the boundaries of an appropriate system.

3. Focusing on Time

In strategic work, a fundamental understanding of time and its potential treatment have received scant attention. We assume that by challenging the existing unidirectional linear concept of time more sensitiveness about continuity and discontinuity could be created. Such sensitiveness can be helpful in both ex ante and ex post sense-making, when seeking multiple perspectives to draw out and engage different dimensions of time and potential paths towards the future. (Parker 2004).

Allowing cyclical, socially constructed and spatially differentiated concepts of time into our strategic thinking serves to re-determine and re-present causation.

Our employment of concepts of time may reveal significant possibilities for changes where previously we had detected no change, reveal parallel interdependent events where previously we had assumed none and reveal repetition of what we had thought unique. (Parker 2004). The complexities of multiple influences and impacts, spaces and time, and the co-existence of layers of time may help organizations to become more precise in their sense-making and decision-making.

Thus the theory of relativity overtakes Newton's notion of absolute time. Alternatively each person and organization has his personal measure of time depending on his own situation. As a result, a postmodernist, perhaps we should call it Foucaultian perspective on time arises, which rejects the Newtonian concept of continuous linear time along which people, events and actions travel and instead replaces it with a focus upon discontinuities and differences. In its simplest form a Foucaultian perspective denies any notion of continuity, any possible replica, between past and present. (Roth 1981, Ermarth 1992, Oldroyd 1999).

We consider time to be historically and culturally specific. This means that situations are rooted in a particular moment and place and seen through the perspective of a certain set of lenses. Different historical periods, different cultures, and different stages of the lifecycle all display different relationships to time. The challenges people face have natural time-spans (days, weeks, months, years, decades, generations), which need to be taken into consideration. And if we are about to develop a temporal and situational awareness, we must also recall that when change happens over time, particular challenges can be situated in time according to people's values and expectations. (C.f. Miller 2007).

Not only specific events have their natural timescales, also different organizations and even nations have their natural timescales. These timescales can range for example from Nokia's hectic three years rolling calendar, where everything from foresight to execution must take place inside a very short period of time to national security strategies where the timeframe from 2008 to 2015 can be for immediate consideration. The timeframe from 2008 to 2025 can represent the age of three technology life-cycles and a full demographic generation, while the timeframe from 2008 to 2035 is a distant horizon in which considerations about global warming, energy and population make sense. (Aaltonen 2008).



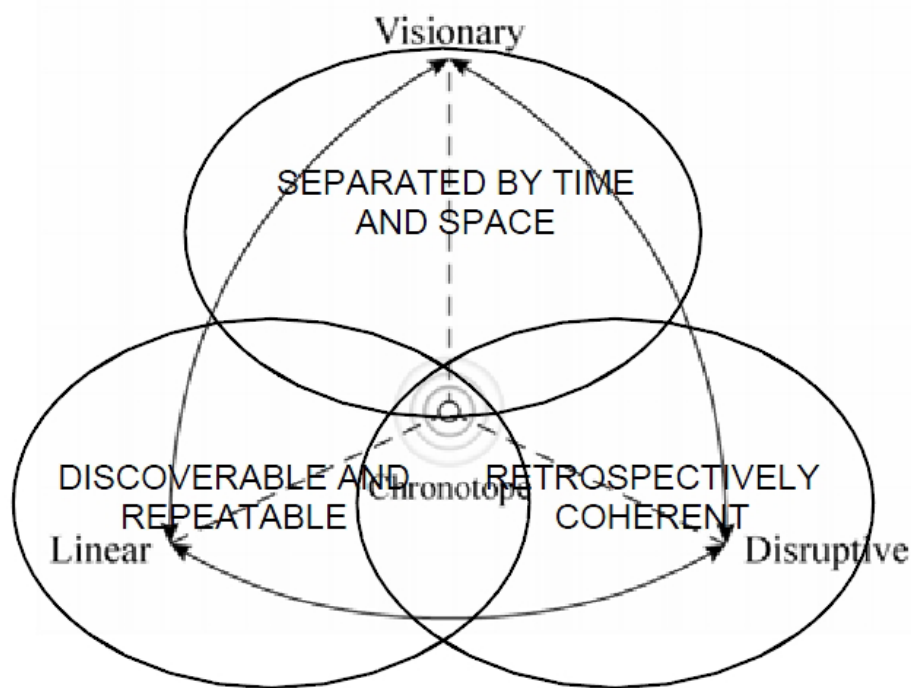
4. Creating a Spatio-temporal Context

In this chapter a general framework, within which we can recast our understanding of causality in a spatio-temporal context that takes both the nature of strategic landscape and the natural timescales of events and systems into consideration, is presented. Making explicit and understanding the dependencies between different causal assumptions and spatio-temporal contexts transcends new perspectives and necessitates a different use of existing concepts. (Adam 1990, Adam 2004, Poli 2007, Aaltonen 2007a).

For the purpose of this article the strategic landscape simply refers the nature of the environment where the work is carried out. It is considered that many things concerning our sense-making efforts and decision-making activities will change when we are more precise about the quality of the strategic landscape. The explicit recognition that there are different types of strategic landscapes where different causal assumptions apply – linear, disruptive and visionary – is the point of departure for increasing effectiveness in sense-making and decision-making.

Linear, disruptive and visionary systems are depicted in figure 1. The spatio-temporal context is called the chronotope space for obvious reasons: It uses the ancient Greek concept of chronotope, a place in time, to reflect the strategic landscape and the time frame in question. The reflection is socially and contextually constructed, it depends on people's perceptions (i.e. local information, logic, values, emotions, principles etc.) about the situation, not always on their actual situation. The positioning made by each chronotope makes explicit our considerations about the situation, and our responses to it. Chronotope is a conceptual vehicle that gives space to socially constructed and spatially differentiated concepts of time and re-determines and re-presents causation. Explicitly used it also serves for reflexive learning.

In the chronotope space, in the bottom left is the linear system where cause and effect relationships are discoverable and repeatable. In the bottom right disruptive systems are found. There the cause and effect relationships can be found to be retrospectively coherent or not at all coherent. Above them is the visionary system, where the cause and effect relationships are separated by time and space from the present moment, which is an imaginary line drawn from the point where the arrows meet in the bottom left to an equivalent point on the right.



> Figure 1 Linear, disruptive and visionary systems.

The shape of the chronotope space is based on specific motivations. In the bottom left hand corner where the arrows meet, there is the present moment in its most linear state: there the cause and effect relationships repeat themselves. If we go further in time, even in a very linear situation, the curve starts to bend to the right, because as we move further away from the present moment the amount of uncertainty increases. In the bottom right hand corner where the arrows meet, there is the present moment in a state of chaos. The line on the right side bends to the left, because when the chaotic situation lies further away in the future, the likelihood of a future event or a condition coming into being can be changed by a policy consideration -if work is begun on it in the present, and the policy consequences can be forecast. The top corner presents the furthest relevant time horizon that varies according to the challenge and organization. (Aaltonen 2007a).

Furthermore, the reason why the line below, from left to right, is not straight, like the imaginary line of the present moment should be, is because under the imagined, straight line is the history of relevant events. This shape thus allows us to reflect upon what has occurred when hindsight analysis is used and should be used.



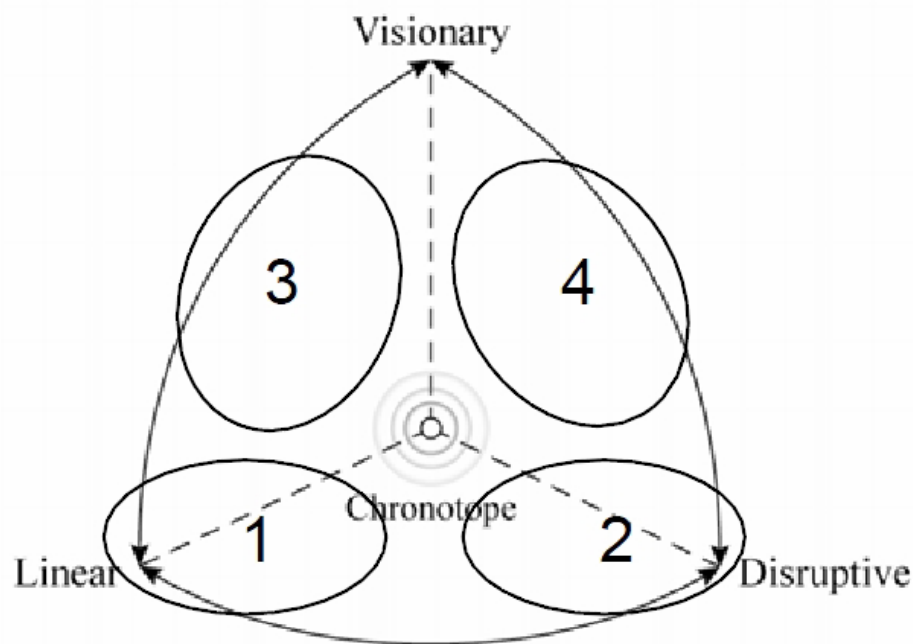
5. Making Sense Through the Use of Descriptive and Practical Examples

The chronotope space enables a socially constructed analysis of a situation with the assistance of the ancient Greek concept of chronotope.

Figure 2, presents four clear, practical descriptions that show how the chronotope space can be used to enrich our understanding of how different management theories can be enacted in different systems. Furthermore, boundaries for appropriate sense-making and influential decision-making are presented.

Description 1 is a child of Newtonian cause and effect thinking that has a strong preference for order. It provides boundaries for process management, process re-engineering, best practice and benchmarking, to name just a few commonly known examples. They work when cause and effect relationships are discoverable and repeatable, but are found lacking and fail to make sense of and manage situations within boundaries 2, 3 and 4. Description 2 is a situation at or close to chaos: crisis management, authoritative management and enactment management all focus on action and intervention and work best within these boundaries.

Descriptions 1 and 2 take place in the present moment whereas descriptions 3 and 4 take place in the future, they are separated from the present moment by time, and therefore they both can be called visionary. In contrast, with the linear thinking of the first description, visionary thinking studies the present from the future and introduces a new dimension to the chronotope space. Descriptions 3 and 4 differ from each other because example 3 lies on the linear side. Traditional futures studies, foresight and the French prospective are generally speaking examples of this boundary. They have been criticised for relying too heavily on deliberate causation (Von Wright 1986, Scarbrough 1998), extrapolating a single element or few elements against an unchanging landscape (Suvin 1979) and difficulties of dealing with complex chains of causality (Ayres 2000, Aaltonen 2007d). Description 4 instead lies on the disruptive side in the future. Terms such as Blue Sky or Blue Ocean have been coined to it. For instance Singapore's Prime Minister's RAHS (risk assessment and horizon scanning) programme scans for, develops and uses methods that work within this boundary.



> Figure 2 Descriptive examples in a chronotope space.

It is logical to claim that, if one's position of a chronotope changes, the preferred tools and interventions would also have to change. Changing your place in a chronotope space, i.e. positioning yourself anew shifts the ground under your feet to provide new perspectives and innumerable new situations or scenarios. The difference and the distance between this and for example with the Pentagon's recent scenario space exercise, which aimed to create a vast number of scenarios and then find a strategy that suited most of them, is that a chronotope space exercise is not ontologically linear. When instead, most of the similar kinds of exercises assume, silently, a single ontology. (Aaltonen 2008).

Chronotope space exercise is, by its very nature, multi-ontological as it not only creates a large number of scenarios quickly, but also enables us to work out the most appropriate responses to them within the appropriate systems. It deals with each system accordingly.



6. Raising an Agenda

The target of our work has been to present a coherent model that enables us to reflect on every possible situation and the relevant time-span of the situation. The approach provides a fresh, original and complementary view to various sense-making and decision-making theories that are not spatio-temporally specific and do not link their cause and effect thinking to spatio-temporal contexts. However, the reflection that is done through the concept of chronotope acknowledges that while being socially constructed it is tied to people's perceptions, values, hopes, morals and goals, and influenced by relevant histories and legitimised meanings. Whatever these perceptions and histories are, the approach provides a way to develop more appropriate and effective interventions.

The chronotope space is a multi-ontological framework that insists that there are different systems in which different cause and effect relationships apply, hence the term multi-ontology. When the properties of these systems are highlighted more appropriate interventions in a system become achievable. These interventions, which are based on our sense-making and decision-making, together form a net of causes that influence the emergence of the future.

The chronotope space also reveals that there are many and differing margins for improvement in our ability to make sense of and influence the emergence of the future. Seeing these margins results from having a more thorough understanding of the natural time frames of events and the properties of their strategic landscapes and matching these understandings to our sense-making and decision-making practices.

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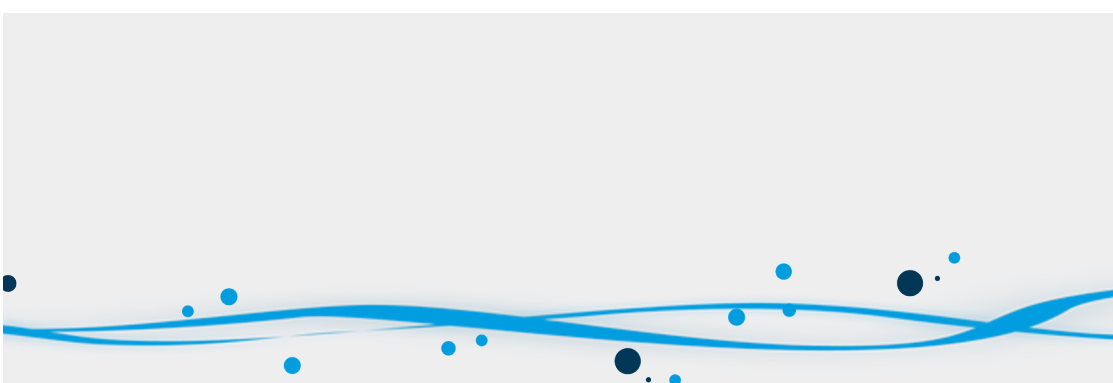


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